Efficacy of Routine Biopsy at Vertebral Augmentation for Compression Fracture Repair in the Early Detection of Malignancy in Presumed Benign VCF

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A certified Fracture Liaison Service

Title

Efficacy of Routine Biopsy at Vertebral Augmentation for Compression Fracture Repair in the Early Detection of Malignancy in Presumed Benign VCF.

Learning Objectives

To assess the utility of routine biopsy at time of vertebral augmentation for compression fracture, as a tool in the early detection of malignancy in presumed benign vertebral compression fracture.

Methods

- Retrospective study conducted on a cohort of consecutice patients undergoing vertebral augmentation between January 2009 to December 2013.
- 410-bed teaching community hospital
- Polymethylmethacrylate cement injection used in every procedure
- Intraoperative vertebral body biopsy was routinely performed at every level of VCF.
- Outcome measures included the SF-36, Visual Analog Scale (VAS), Oswestry Disabilty Index (ODI), analgesic use, and complications recorded pre - and post-operatively up to 3 years.

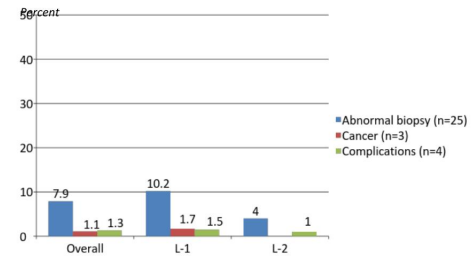
Results

Three different anatomic levels were augmented in 327 procedures (256 patients, μ age = 75.2yr). The most common levels augmented were L-1 (64.5%), and L-2 (31.2%). Analysis of 271 routine vertebral biopsies in 256 patients revealed 25 (9.2%) abnormal biopsy findings. Routine vertebral biopsy returned an overall cancer diagnosis rate of 1.1% (3 of 256) when combining patients with no prior history of cancer or cancer thought to be in remission. In these 3 patients, history, examination, laboratory tests, and pre-procedure imaging all failed to suggest malignancy.
There were 92 (28.4%) patients with fractures of adjacent vertebra (13.0% inferior, 15.4% superior).
VAS and ODI scores demonstrated significant improvement in pain and disability that was evident at week 12 and was sustained at up to 1 year postoperatively ($p<0.01$). This was not dependent on the number of levels treated (1 vs >1 levels) ($p>0.05$), or etiology of VCF ($p>0.05$).
Twelve patients (4.7%) had persistent pain not associated with the treated VCF.
Complication rate was 1.3% (4 of 304). There were 37 deaths, none of which related to surgery.

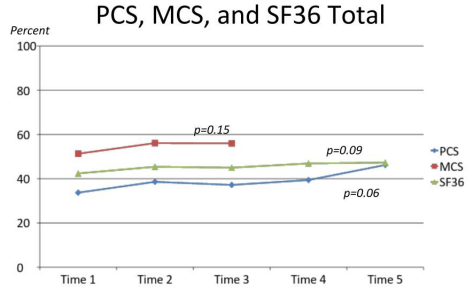
Conclusions

Routine vertebral biopsy performed during vertebral augmentation with kyphoplasty does not demonstrate cancer-related VCF's in patients with no previous cancer diagnosis or active malignancy. There was significant improvement in disability at 12 weeks and one year. Adjacent level fractures were more likely to be superior to the treated level. The 12 patients with persistent pain may be due to other symptomatic osteoporotic levels in relation to height preservation. This pain may be a result of undiagnosed/untreated fracture rather than treatment failure.

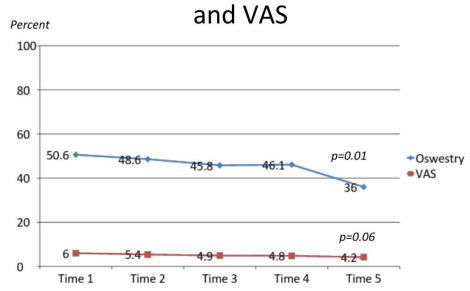
Procedure and Biopsy Findings Overall and by Level



Outcome Measures over 12 Months: PCS, MCS, and SF36 Total



Outcomes Over 12 Months: Oswestry and VAS



Fractures of Adjacent Vertebra